

Claims

What is claimed is:

1. A method of producing therapeutic peptides as vaccines in the prevention of human disease caused by a protein, the method comprising:

- a. identifying a protein responsible for causing human disease;
- b. identifying one or more signal oligopeptide sequences within the structure of the disease causing protein, the one or more signal oligopeptides representing the amino acid sequence of maximum hydrophilicity of the protein; and
- c. synthesizing one or more vaccine oligopeptides, the vaccine oligopeptides having amino acid sequences corresponding to the amino acid sequences of the signal oligopeptides of maximum hydrophilicity.

2. The method of claim 1 further comprising a method of identifying one or more signal oligopeptide sequences within the structure of the disease causing protein, the one or more signal oligopeptides representing the amino acid sequence of maximum surface probability of the amino acids in the disease causing protein.

3. The method of claim 1 further comprising a method of identifying one or more signal oligopeptide sequences within the structure of the disease causing protein, the one or more signal oligopeptides representing the amino acid sequence of maximum electrical charge of the amino acids in the disease causing protein.

4. The method of claim 1 further comprising an evolutionary comparison method, wherein one or more species of animals in an evolutionary chain are selected to produce different vaccine oligopeptides to the same disease causing protein.

5. The method of claim 1 further comprising an optimization step, wherein the one or

more vaccine oligopeptides are manipulated through one or more amino acid residue substitutions, amino acid deletions, or amino acid insertions, or any combination thereof, to produce an optimized immunogenic response in vaccinated humans.

5 6. The method of claim 1 wherein the immunogenic response of the vaccine oligopeptides in humans is enhanced by repetition of the vaccine oligopeptides to form a linear polypeptide.

10 7. The method of claim 1 wherein the immunogenic response of the vaccine oligopeptides in humans is enhanced by repetition of the vaccine oligopeptides to form a cyclic polypeptide.

15 8. The method of claim 1 wherein the immunogenic response of the vaccine oligopeptides in humans is enhanced by coupling of one or more of the vaccine oligopeptides to an immunogenic protein or non-protein haptens.

20 9. The method of claim 1 wherein the area of maximum hydrophilicity is identified by one or more hydrophilicity determining algorithm.

25 10. A method of producing therapeutic peptides as vaccines in the prevention of human disease caused by a protein, the method comprising:

- a. identifying a protein responsible for causing human disease;
- b. identifying one or more signal oligopeptide sequences within the structure of the disease causing protein, the one or more signal oligopeptides representing the amino acid sequences of maximum electrical charge of the protein; and
- c. synthesizing one or more vaccine oligopeptides, the vaccine oligopeptides having amino acid sequences corresponding to the amino acid sequences of the signal oligopeptides of maximum electrical charge.

30 11. A method of producing therapeutic peptides as vaccines in the prevention of human

disease caused by a protein, the method comprising:

- d. identifying a protein responsible for causing human disease;
- e. identifying one or more signal oligopeptide sequences within the structure of the disease causing protein, the one or more signal oligopeptides representing the amino acid sequences of maximum electrical charge of the protein;
- f. synthesizing one or more vaccine oligopeptides, the vaccine oligopeptides having amino acid sequences corresponding to the amino acid sequences of the signal oligopeptides of maximum electrical charge; and
- g. an evolutionary comparison step, wherein one or more species of animals in an evolutionary chain are selected to produce different vaccine oligopeptides to the same disease causing protein.

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